RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-YZ/Ward No- 5/2016-17/001 **Date:04.08.2016**

TEST REPORT

Client Name & address* : Executive Engineer, Project Division, Yalahanka Zone, BBMP.

Name of Work* : Improvements to roads and drains at balance portion of Chokkanahalli road connecting Thanisandra main road to Sampigehalli in ward No. 05, Byatarayanapura Sub Division.

Name of the test : Sieve Analysis

Method of test : IS : 2386 Part 1 -1963 RA-2011

Type of Aggregate : Coarse Aggregates (40mm down size)

Date of Testing : 03.08.2016

Total Wt. of Aggregates taken in gms= **15000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits as per IS 383-1970 (RA-2011)
63	0	0	0	100	100
40	205	1.37	1.37	98.63	95-100
20	5560	37.07	38.43	61.57	30-70
10	7590	50.60	89.03	10.97	10-35
4.75	1125	7.50	96.53	3.47	0-5

* Information is furnished by the Customer/Representative

Note:

1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported within 15 days from the date of testing.

For RBI-TECHNICAL SERVICES

Proprietor
RBI ~~Technical~~ Services
(CONSULTANT)

Assistant Engineer

Assistant Executive Engineer

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-YZ/Ward No- 5/2016-17/001 **Date:07.08.2016**

TEST REPORT

Client Name & address* : Executive Engineer, Project Division, Yalahanka Zone, BBMP.

Name of Work* : Improvements to roads and drains at balance portion of Chokkanahalli road connecting Thanisandra main road to Sampigehalli in ward No. 05, Byatarayanapura Sub Division.

Method of test : IS-4031 (Part -5), (Part - 4), (Part - 6) 1988 (RA-2009)

Type of Sample : Cement, OPC 43 grade

Date of Testing : 03.08.2016 to 06.08.2016

RBI TECHNICAL SERVICES Quality Certified Bangalore.

PHYSICAL PROPERTIES

Sl.No	Name of the test	Test Results	Requirements as per IS: 8112-1989
1	Consistancy	29.50%	Not Mentioned
2	Initial Setting Time	150 minutes	Not Less than 30 Minutes
3	Final Setting Time	390 minutes	Not More than 600 Minutes
4	Compressive Strength		
	3 Days (72 hrs)	26.0 Mpa	Shall not be less than 23.0 Mpa

Note:

1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported within 15 days from the date of testing.

For RBI-TECHNICAL SERVICES

Proprietor
RBI -Technical Services
(CONSULTANT)

Assistant Engineer

Assistant Executive Engineer

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-YZ/Ward No- 5/2016-17/001 **Date:15.08.2016**

RBI- Technical Services

ATTERBERG LIMITS TEST FOR GSB

RBI TECHNICAL SERVICES Quality Certified Bangalore.

Client	:	**Executive Engineer, Project Division, Yalahanka Zone, BBMP.**
Name of Work	:	Improvements to roads and drains at balance portion of Chokkanahalli road connecting Thanisandra main road to Sampigehalli in ward No. 05, Byatarayanapura Sub Division.
Source of Sample	:	Sample Supplied by Client
Date of Sample Testing	:	**14.08.2016 to 15.08.2016**
Material	:	**Close - Graded Granular Sub-Base, Grading II**

Sl. No.	Name of Test	Test Method	Test Results
1	Liquid Limit	IS : 2720-1985 Part 5 RA : 2010	22.40%
3	Plasticity index	IS : 2720-1985 Part 5 RA : 2010	NP

Remarks:

1 Results relate only to the sample (s) under test in as received condition and applicable parameter (s).
2 The sample will be stored upto one month from the date of issue of test report unless otherwise specified.

RBI -Technical Services
(CONSULTANT)
For RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-YZ/Ward No- 5/2016-17/001 **Date:15.08.2016**

RBI- Technical Services

ATTERBERG LIMITS TEST FOR GSB

Client	:	**Executive Engineer, Project Division, Yalahanka Zone, BBMP.**
Name of Work	:	Improvements to roads and drains at balance portion of Chokkanahalli road connecting Thanisandra main road to Sampigehalli in ward No. 05, Byatarayanapura Sub Division.
Source of Sample	:	Sample Supplied by Client
Date of Sample Testing	:	**14.08.2016 to 15.08.2016**
Material	:	**Close - Graded Granular Sub-Base, Grading II**

Sl. No.	Name of Test	Test Method	Test Results
1	Liquid Limit	IS : 2720-1985 Part 5 RA : 2010	22.00%
3	Plasticity index	IS : 2720-1985 Part 5 RA : 2010	NP

Remarks:

1 Results relate only to the sample (s) under test in as received condition and applicable parameter (s).
2 The sample will be stored upto one month from the date of issue of test report unless otherwise specified.

RBI -Technical Services
(CONSULTANT)
For RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-YZ/Ward No- 5/2016-17/001 **Date: 19.08.2016**

RBI- Technical Services

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE

Client	:	**Executive Engineer, Road Infrastructure-Yalahanka Division, BBMP.**
Name of Work	:	Improvements to roads and drains at balance portion of Chokkanahalli road connecting Thanisandra main road to Sampigehalli in ward No. 05, Byatarayanapura Sub Division.
Source of Sample	:	Hot Mix Plant
Date of Sample Testing	:	**18.08.2016 to 19.08.2016**
Material	:	**WMM**

RBI - TECHNICAL SERVICES Quality Certified Bangalore.

Sl. No.	Name of Test	Test Method	Test Results
1	Liquid Limit	IS : 2720-1985 Part 5 RA : 2010	22.30%
3	Plasticity index	IS : 2720-1985 Part 5 RA : 2010	NP

Remarks:

1 Results relate only to the sample (s) under test in as received condition and applicable parameter (s).
2 The sample will be stored upto one month from the date of issue of test report unless otherwise specified.

RBI -Technical Services
(CONSULTANT)
For RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-YZ/Ward No- 5/2016-17/001 **Date: 19.08.2016**

RBI- Technical Services

RBI TECHNICAL SERVICES Quality Certified Bangalore.

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE

Client	:	**Executive Engineer, Road Infrastructure- Yalahanka Division, BBMP.**
Name of Work	:	Improvements to roads and drains at balance portion of Chokkanahalli road connecting Thanisandra main road to Sampigehalli in ward No. 05, Byatarayanapura Sub Division.
Source of Sample	:	Hot Mix Plant
Date of Sample Testing	:	**18.08.2016 to 19.08.2016**
Material	:	**WMM**

Sl. No.	Name of Test	Test Method	Test Results
1	Liquid Limit	IS : 2720-1985 Part 5 RA : 2010	22.30%
3	Plasticity index	IS : 2720-1985 Part 5 RA : 2010	NP

Remarks:

1 Results relate only to the sample (s) under test in as received condition and applicable parameter (s).
2 The sample will be stored upto one month from the date of issue of test report unless otherwise specified.

RBI -Technical Services
(CONSULTANT)
For RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-YZ/Ward No- 5/2016-17/001 Date:19.08.2016

RBI-TECHNICAL SE... Quality Certified ... Bangalore.

RBI- Technical Services

AGGREGATE IMPACT VALUE

(IS : 2386 Part - 4)

Client	**Executive Engineer, Project Division, Yalahanka Zone, BBMP.**
Name of Work	**Improvements to roads and drains at balance portion of Chokkanahalli road connecting Thanisandra main road to Sampigehalli in ward No. 05, Byatarayanapura Sub Division.**
Source of Sample	**Hot Mix Plant**
Date of Testing	**18.08.2016**
Material	**Wet Mix Macadam**

Description		Trails		
		1	2	3
Wt.Of stone pieces(dry) passing IS Sieve 12.5mm but retained in IS Sieve 10mm(gm)	(Wa)	320.0	320.0	321.0
Wt.Of the fraction retained in IS Sieve 2.36mm after the impact test(gm)	(Wb)	261.6	261.8	262.0
Wt.Of the fraction Passed in IS Sieve 2.36mm after the impact test(gm)	(Wc)	58.20	57.95	58.60
Aggregate Impact value (%)	(Wc/Wa)100	18.2	18.1	18.3
Average Aggregate Impact value (%)		**18.2**		
Specified Aggregate Impact value (%)		**30.0**		

For RBI-TECHNICAL SERVICES

Proprietor
RBI -Technical Services (CONSULTANT)

Assistant Engineer

Assistant Executive Engineer

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-YZ/Ward No- 5/2016-17/001 **Date: 19.08.2016**

Aggregate Shape Test
IS: 2386 Part I

Client	**Executive Engineer, Project Division,Yalahanka Zone, BBMP.**
Name of the Work	Improvements to roads and drains at balance portion of Chokkanahalli road connecting Thanisandra main road to Sampigehalli in ward No. 05, Byatarayanapura Sub Division.
Type of Mix	**WMM**
Source of Sample	Hot Mix Plant
Date of Testing	**18.08.2016**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	1850	13.5	w_5	145	40.5	x_5	155
20	16	W_6	1495	10.8	w_6	120	32.4	x_6	135
16	12.5	W_7	635	8.55	w_7	105	25.5	x_7	105
12.5	10	W_8	525	6.75	w_8	85	20.2	x_8	80
10	6.3	W_9	195	4.89	w_9	15	14.7	x_9	15

Flakiness Index 10.00%

Elongation Index 10.43%

Combined Flakiness & Elongation Index 20.43%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

For RBI-TECHNICAL SERVICES

RBI -Technical Services
(CONSULTANT)

Proprietor

Assistant Engineer

Assistant Executive Engineer

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104. Tel. : 080 - 23300857

Cell : 9448352709 Email : rbitc2@gmail.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-YZ/Ward No- 5/2016-17/001

Date: 19.08.2016

Aggregate Shape Test

IS: 2386 Part I

Client	**Executive Engineer, Project Division,Yalahanka Zone, BBMP.**
Name of the Work	Improvements to roads and drains at balance portion of Chokkanahalli road connecting Thanisandra main road to Sampigehalli in ward No. 05, Byatarayanapura Sub Division.
Type of Mix	**WMM**
Source of Sample	Hot Mix Plant
Date of Testing	**18.08.2016**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	1980	13.5	w_5	160	40.5	x_5	155
20	16	W_6	1450	10.8	w_6	110	32.4	x_6	135
16	12.5	W_7	660	8.55	w_7	105	25.5	x_7	120
12.5	10	W_8	540	6.75	w_8	85	20.2	x_8	85
10	6.3	W_9	200	4.89	w_9	15	14.7	x_9	10

Flakiness Index 9.83%

Elongation Index 10.46%

Combined Flakiness & Elongation Index 20.29%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

For RBI-TECHNICAL SERVICES

RBI -Technical Services

(CONSULTANT)

Proprietor

Assistant Engineer

Assistant Executive Engineer

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104. Tel. : 080 - 23300857

Cell : 9448352709 Email : rbitc2@gmail.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-YZ/Ward No- 5/2016-17/001 **Date: 19.08.2016**

Aggregate Shape Test

IS: 2386 Part I

Client	**Executive Engineer, Project Division,Yalahanka Zone, BBMP.**
Name of the Work	Improvements to roads and drains at balance portion of Chokkanahalli road connecting Thanisandra main road to Sampigehalli in ward No. 05, Byatarayanapura Sub Division.
Type of Mix	**WMM**
Source of Sample	Hot Mix Plant
Date of Testing	**18.08.2016**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	1750	13.5	w_5	200	40.5	x_5	175
20	16	W_6	1500	10.8	w_6	135	32.4	x_6	160
16	12.5	W_7	605	8.55	w_7	125	25.5	x_7	140
12.5	10	W_8	500	6.75	w_8	90	20.2	x_8	95
10	6.3	W_9	250	4.89	w_9	15	14.7	x_9	15

Flakiness Index 12.27%

Elongation Index 12.70%

Combined Flakiness & Elongation Index 24.97%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

For RBI-TECHNICAL SERVICES

RBI -Technical Services

(CONSULTANT)

Proprietor

Assistant Engineer

Assistant Executive Engineer

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104. Tel. : 080 - 23300857

Cell : 9448352709 Email : rbitc2@gmail.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-YZ/Ward No- 5/2016-17/001

Date: 19.08.2016

Aggregate Shape Test
IS: 2386 Part I

Client	**Executive Engineer, Project Division,Yalahanka Zone, BBMP.**
Name of the Work	Improvements to roads and drains at balance portion of Chokkanahalli road connecting Thanisandra main road to Sampigehalli in ward No. 05, Byatarayanapura Sub Division.
Type of Mix	**WMM**
Source of Sample	Hot Mix Plant
Date of Testing	**18.08.2016**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	1900	13.5	w_5	185	40.5	x_5	175
20	16	W_6	1350	10.8	w_6	125	32.4	x_6	140
16	12.5	W_7	985	8.55	w_7	135	25.5	x_7	130
12.5	10	W_8	800	6.75	w_8	80	20.2	x_8	70
10	6.3	W_9	250	4.89	w_9	10	14.7	x_9	5

Flakiness Index 10.12%

Elongation Index 9.84%

Combined Flakiness & Elongation Index 19.96%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

For RBI TECHNICAL SERVICES

RBI-Technical Services
(CONSULTANT)

Proprietor

Assistant Engineer

Assistant Executive Engineer

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104. Tel. : 080 - 23300857

Cell : 9448352709 Email : rbitc2@gmail.com